

WHAT IS CLAIMED IS:

1. A semiconductor integrated circuit device comprising an amplifying circuit for amplifying an analog color video signal outputted from an imaging element, an AD conversion circuit for converting the amplified signal to a digital signal, a differential means for obtaining a difference between the codes of the adjacent pixels in regard to the same color after the AD conversion and a code conversion means for code conversion of an output of said differential means.

2. A semiconductor integrated circuit device according to claim 1, wherein said code conversion means is a binary gray code conversion circuit for converting the input binary code to the gray code.

3. A semiconductor integrated circuit device according to claim 1, wherein said code conversion means is composed of a circuit for adding or subtracting a fixed value to or from the input code.

4. A semiconductor integrated circuit device according to any one of claims 1 to 3, wherein said differential means is composed of a delay circuit for delaying an output code of said AD conversion circuit and a subtraction means for obtaining a difference between the

code delayed by said delay circuit and the input code, while said delay circuit is constructed to vary a delay time depending on the color arrangement of the input video signal.

5. An imaging system comprising:

an imaging element provided with a color filter;

a semiconductor integrated circuit device including an amplifying circuit for amplifying an analog color video signal outputted from said imaging element, an AD conversion circuit for converting the amplified signal to a digital signal, a differential means for obtaining a difference between the codes of the adjacent pixels in regard to the same color after the AD conversion and a first code conversion means for converting an output of said differential means; and

a semiconductor integrated circuit device for image process including a second code conversion means for converting the codes outputted from said semiconductor integrated circuit device and an image processing circuit.

6. An imaging system according to claim 5, wherein said first code conversion means is a binary gray code conversion circuit for converting the binary code to the gray code and said second code conversion means is a gray binary code conversion circuit for converting the gray code into the binary code.

7. An imaging system according to claim 5, wherein said first code conversion means is composed of a circuit for adding or subtracting a fixed value to or from an input code and said second code conversion means is composed of a circuit for subtracting or adding a fixed value from or to an input code.

8. An imaging system according to any one of claims 5 to 7, wherein said differential means is composed of a delay circuit for delaying an output code of said AD conversion circuit and a subtraction means for obtaining a difference between the code delayed by said delay circuit and the input code, and said delay circuit is constructed to vary a delay time depending on color arrangement of an input video signal.

9. An imaging system according to any one of claims 5 to 8, wherein a storage means is provided to store a digital video data, said semiconductor integrated circuit device for image process is provided with a data compression circuit for compressing the code converted by said second code conversion means and a data expanding circuit for expanding the compressed data, and the data compressed by said data compression circuit is stored in said storage means.

10. A signal conversion method for converting an analog color video signal outputted from an imaging element to a digital signal, wherein a difference between the codes of the adjacent pixels in regard to the same color after the AD conversion of the video signal by the AD conversion circuit and an output code of said differential means is converted to the code of less number of bits to be changed over among the preceding and succeeding codes.

11. A semiconductor integrated circuit device comprising:

a correlation double sampling circuit for sampling an analog color video signal output from an imaging element;

an amplifying circuit for amplifying the analog color video signal output from the correlation double sampling circuit;

an AD conversion circuit for converting the analog color video signal amplified by the amplifying circuit to a digital signal;

a differential circuit for obtaining a difference between the codes of pixels of the digital signal in regard to codes for the same color in pixels that adjoin one another, and

a code conversion circuit for code conversion of an output of said differential circuit.

12. A semiconductor integrated circuit device according to claim 11,

wherein the sampling period of the correlation double sampling circuit corresponds to a color arrangement of the analog color video signal output from the image element.

13. A semiconductor integrated circuit device according to claim 12,

wherein said differential circuit comprises a circuit to set an amount of time corresponding to the sampling period.

14. A semiconductor integrated circuit device according to claim 13,

wherein the circuit comprises a register for setting the amount of time.

15. A semiconductor integrated circuit device according to claim 12,

wherein the amount of time corresponds to a color filter used with the image element.

16. A semiconductor integrated circuit device according to claim 11,

wherein the code conversion circuit is a binary to gray code conversion circuit for converting an input binary code to a gray code.

17. A semiconductor integrated circuit device according to claim 11,

wherein the code conversion circuit comprises a circuit for adding or subtracting a fixed value to or from an input code.

18. A semiconductor integrated circuit device according to claims 11,

wherein the differential circuit comprises a delay circuit for delaying an output code of the AD conversion circuit and a subtraction circuit for obtaining a difference between the output code delayed by the delay circuit and an input code, and

wherein the delay circuit is constructed to vary a delay time depending on a color arrangement of an input video signal.

19. A semiconductor integrated circuit device comprising:

a correlation double sampling circuit for sampling an analog color video signal output from an imaging element;

an AD conversion circuit for converting the analog color video signal output from the correlation double sampling circuit to a digital signal;

a differential circuit for obtaining a difference between codes of pixels of the digital signal in regard to

codes for the same color in pixels that adjoin one another,
and

a code conversion circuit for code conversion of an
output of said differential circuit.

20. A semiconductor integrated circuit device
according to claim 19,

wherein the sampling period of the correlation double
sampling circuit corresponds to a color arrangement of the
analog color video signal output from the image element.

21. A semiconductor integrated circuit device
according to claim 20,

wherein said differential circuit comprises a circuit
to set an amount of time corresponding to the sampling
period.

22. A semiconductor integrated circuit device
according to claim 21,

wherein the circuit comprises a register for setting
the amount of time.

23. A semiconductor integrated circuit device
according to claim 21,

wherein the amount of time corresponds to a color
filter used with the image element.